

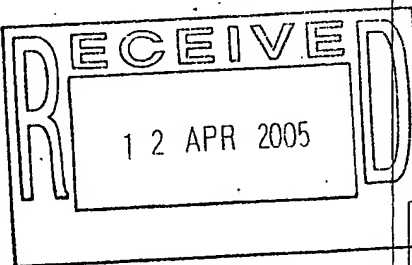
# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:

KEITH W NASH & CO  
90-92 Regent Street  
Cambridge CB2 1DP  
GRANDE BRETAGNE



### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

08.04.2005

Applicant's or agent's file reference  
KWN/C611.1/U

### IMPORTANT NOTIFICATION

International application No.  
PCT/GB2004/001527

International filing date (day/month/year)  
07.04.2004

Priority date (day/month/year)  
12.04.2003

Applicant  
UNITED WIRE LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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D-80298 Munich  
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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference KWN/C611.1/J	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/GB2004/001527	International filing date (day/month/year) 07.04.2004	Priority date (day/month/year) 12.04.2003	
International Patent Classification (IPC) or national classification and IPC B07B1/46			
Applicant UNITED WIRE LIMITED et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I      Basis of the opinion</p> <p><input type="checkbox"/> Box No. II      Priority</p> <p><input checked="" type="checkbox"/> Box No. III      Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV      Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V      Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI      Certain documents cited</p> <p><input type="checkbox"/> Box No. VII      Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII      Certain observations on the international application</p>			
Date of submission of the demand  03.09.2004		Date of completion of this report  08.04.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Militzer, E  Telephone No. +49 89 2399-2895	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/001527

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1, 3-12 as originally filed  
2 filed with telefax on 08.02.2005

**Claims, Numbers**

5 (part), 6-11, 12 (part), 17 (part) as originally filed  
1-4, 5 (part), 12 (part), 13-16, 17 (part) filed with telefax on 08.02.2005

**Drawings, Sheets**

1/4-4/4 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 15-17

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 15-17

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-14 .

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement
- |                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-14 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-14 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-14 |
|                               | No: Claims  |      |
2. Citations and explanations (Rule 70.7):
- see separate sheet**

**Re Item IV**

**Lack of unity of invention**

The present application relates to several inventions or groups of inventions which are not so linked as to form a single general inventive concept and therefore do not comply with the requirements of PCT Rule 13.1, the different inventions being the following:

Invention 1 - Claims 1-14: an integral screen wherein the warp wires extend across the width and the weft wires extend across the length of the rectangular opening and method of making the same

Invention 2 - Claims 15-17: a hook-strip screen wherein the attachment edges are parallel to the weft wires and the warp extend between the edges

The only features common to the two inventions are that the screen comprises "a sheet of woven wire cloth made of warp and weft wires". These features are well known from the prior art, as disclosed by e.g. document US-2002023883 (see figure 4A) . Thus, these features cannot be considered to be special technical features.

The remaining features of the two inventions solve two different problems by means of different potentially special technical features.

The problem to be solved by the first invention is to prevent the wires which are subject to greater stress (the wires running parallel to the shorter side of the rectangular opening) to fail first. The feature which solves this problem is the specific orientation of the screening cloth on the rectangular opening. The screening cloth is so oriented that warp wires which are subject to greater stress extend across the width of the rectangular opening and the weft wires extend across the length of the rectangular opening.

In claim 15 there is no mention of a rectangular opening. The drawback of the unbalanced stress on the wires of the screen (the stress on the wires across the width is greater than the stress on the wires across the length of the opening) can therefore not be considered to be the problem to be solved by the second invention. It seem therefore that the problem to be solved by the second invention is merely directed to the attachment under tension of

the screen on a support defining an opening. The feature which solves this problem is the provision of hook-strips along two edges which are parallel to the weft wires of the weave.

Since the problems to be solved by the two inventions and the features which solve these problems are different, the different technical features cannot be considered to be corresponding special technical features as required by PCT Rule 13.2.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Claim 1:

According to US 2002/023883 (DI) the general direction of fluid flow over the described screen may either be in the direction of the length of its non-square openings or in the direction of the openings width.

However, there is no discussion in DI of the orientation of warp and weft wires relative to the support structure of a screen. Furthermore, there is no disclosure or suggestion of orientating a woven wire cloth in such a screen with its warp wires extending across the width of a rectangular opening in the support structure.

Therefore, the subject matter of claim 1 is new (Article 33(2) PCT).

The other prior art documents do also not suggest to orient the screen as required by claim 1.

Consequently, the subject matter of claim 1 involves also an inventive step (Article 33(3) PCT).

2. Claim 11:

No document mentioned in the search report discloses a method of manufacturing two integral screens having the features of claim 11. In particular the prior art does not show

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(SEPARATE SHEET)**

International application No.

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that a cloth is applied onto two rectangular frames with the weft wires extending parallel to the longer edges of the frame and cutting the cloth after the cloth has been bonded to the frame.

The subject matter of claim 11 appears to be new and not rendered obvious by the prior art.

Independent claim 11 meets therefore the requirements of Article 33(2) and (3) PCT.

Dependent claims:

Claims 2-10 and 12-14 are dependent on claims 1 and 11 respectively and as such also meet the requirements of the PCT with respect to novelty and inventive step.



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2.

Robust filter media incorporating rectangular mesh are disclosed in US 5,944,197, PCT Application PCT/GB2002/005018, and US Application 2002/0023883.

A rectangular mesh is normally woven with more warp wires per unit length than weft wires per unit length, since the time taken to weave a given length of wirecloth is dependent on the number of weft wires.

One common type of screen comprises layers of mesh bonded to a support structure (normally referred to as a frame) which is usually generally flat and rectangular in shape, and which contains a number of similarly sized (normally rectangular) openings across which the screen mesh is tensioned. The mesh is supported by the frame and the openings in the frame define a corresponding number of mesh covered windows for filtering the fluid materials. The frame may be of metal but more preferably is of a plastics material particularly GRP and preferably is reinforced internally by a wire or rod framework. Such screens will be referred to as integral screens, that is the mesh and frame are integrated by the bonding of the mesh to the support frame. a jig for making integral screens in which two screens are made at the same time, is described in GB Patent Specification 2,382,037. Such a jig will be referred to as a jig of the type described.

In operation the maximum stress on the wire cloth in such a screen is found to occur at the middle of the longer dimension of the frame. This suggests that the wires running parallel to the shorter sides are subject to greater stress than those running parallel to the longer sides of the screen. Areas of maximum stress are indicated in Figure 1, which is described more fully later.

It has also been observed in practice that the wires running parallel to the shorter span of the mesh in such a frame often tend to fail first, which also supports the theory that these wires are subject to greater stress.

CLAIMS

1. An integral screen for use in a vibrating machine for separating solids from liquid material comprising woven wire cloth of orthogonal warp and weft wires, tensioned and bonded to a support structure defining a rectangular opening across which the cloth extends, wherein the orientation of the cloth is chosen so that the warp wires extend across the width (i.e. shorter dimension) of the rectangular opening and the weft wires extend across the length (i.e. longer dimension) of the rectangular opening.
2. A screen as claimed in claim 1 wherein the rectangular opening in the support structure includes a plurality of similarly dimensioned, similarly orientated and regularly arranged smaller rectangular openings or windows, formed by a lattice of struts criss-crossing the larger opening, and the cloth is bonded to the lattice struts as well as the boundary of the larger opening.
3. A screen as claimed in claim 2 wherein the warp wires are also parallel to the width dimension (i.e. the shorter sides) of the smaller rectangular openings.
4. A screen as claimed in any of claims 1 to 3 wherein the cloth has a so-called rectangular mesh in that it has rectangular openings in the weave, formed by a greater number of warp wires per unit length than there are weft wires per unit length, and in use the greater number of warp wires resist the greater stress which can occur across the width of the central region of the or each opening.
5. A screen as claimed in any of claims 1 to 3 wherein the cloth has a so-called square mesh in that it has generally square openings in the weave, and the warp wires are selected to have a greater cross-sectional size than the weft wires, which since they extend perpendicularly relative to the length dimension of the or each opening, are able

dimensioned smaller rectangular openings or windows, and the warp wires are perpendicular to the longer dimension of each frame and to the longer dimension of each of the smaller openings in the frames.

13. A method of manufacturing a screen as claimed in claim 1 using a jig of the type described, wherein if the cloth has a square mesh and the warp wires have a greater cross-sectional size than the weft wires, the cloth is positioned so that the stronger warp wires extend across the width of each support frame, and if the cloth has a rectangular mesh, the greater number of warp wires per unit length will extend across the width of each support frame, so that in each case the greater wire cross-section or greater number of wires per unit length, will resist in use the stresses which are found to occur across the width of the central region of the or each opening in the frame.
14. A method as claimed in claim 11 using a jig of the type described wherein 48" wide cloth is cut into 66" lengths from a 48" wide roll, and the 48" x 66" sheets of wire cloth are positioned over pairs of frames and bonded thereto.
15. A hook-strip screen for use in a vibrating machine for separating solids from liquid material comprising a sheet of woven wire cloth having a plurality of hooks along two opposite parallel edges of the wire cloth sheet for attaching the said two edges of the sheet to the machine, which edges are parallel to the weft wires of the weave, so that the warp wires extend between the edges containing the rows of hooks.
16. A hook-strip screen as claimed in claim 15 wherein the cloth has a rectangular mesh weave and there are more warp wires than weft wires per unit length and the greater number of warp wires is available in use to resist any over-tensioning.
17. A hook-strip screen as claimed in claim 15 wherein the cloth has a square mesh weave and the hooks are positioned along the two parallel edges of the cloth between which